Abstract

Described are methods and compositions for promoting oral health in a host that involve the administration of a 65 kDa protein from *S. mutans* or a fragment or functional analog thereof, to the oral cavity of the host. The 65 kDa protein exhibits murein hydrolase enzyme activity and in inventive embodiments the enzyme or active fragments can be used to lyse bacteria commonly present in dental plaque or other surfaces of the oral cavity. Methods for controlling dental caries include administering non-immunogenic polypeptides from bacterial adhesions to competitively block bacterial attachment without implicating the immune system of the host. Novel isolated DNA encoding the 65 kDa protein or a fragment thereof, as well as recombinant forms of the protein or fragment, and methods for their production, are also described.